

Mathematics 2: Calculus II

Course # DMNS 1003

Credits 6

Pre-requisites and Co-requisites: Calculus I for Computer Science

Course Description:

Calculus II, the second part of the calculus sequence, builds upon foundational concepts to deepen understanding and application in disciplines such as science, engineering, economics, and science. The course covers sequences and series, including convergence and power series; differentiation and integration of vector-valued functions; functions of several variables, with a focus on partial derivatives, gradients, and optimization; multiple integration techniques for solving real-world problems; and vector analysis. Emphasizing higher-order thinking, this course fosters critical analysis and problem-solving skills essential for advanced study and interdisciplinary applications.

Course Learning Outcomes

Upon completion of this course, students should be able to:

- Use appropriate tests to check whether series converge or diverge
- Rewrite rectangular coordinates in other coordinates such as polar, cylindrical, or spherical coordinates to integrate circular, cylindrical, or spherical regions
- Calculate the derivative and integral of vector-values functions to compute the gradient vector
- Calculate partial derivatives of several-variable functions to compute the gradient
- Calculate double integral to find the volume under a surface defined by several-variable functions

Course Assessments and Grading

Item	Weight
Homework (5-8 problem sets)	20%
Quizzes (5-8)	25%
Midterm Exam	25%
Final exam	30%